

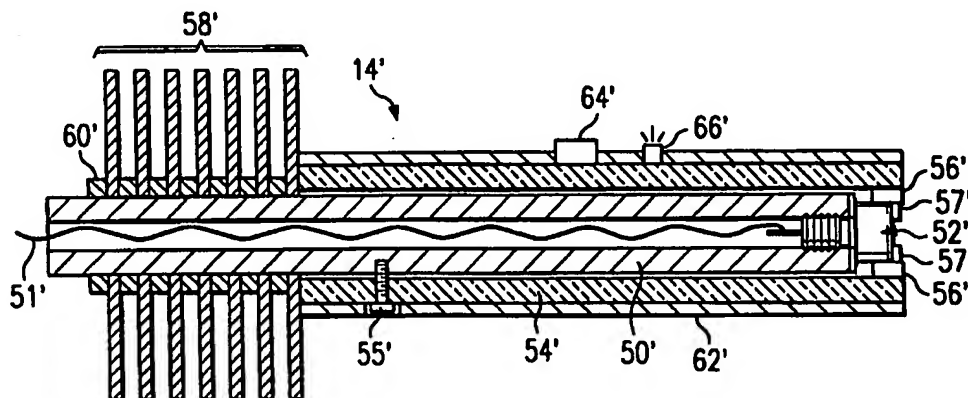
L Number	Hits	Search Text	DB	Time stamp
3	10	(electrotherapy or electrostimulation or kinestherapy or kinesiotherapy) AND (led or ped or light AND emitting AND diode or laser AND emitting AND diode or laser AND diode or light AND diode or photon AND diode or photon AND emitting AND diode or photo AND emitting AND diode or photo AND diode)	EPO; JPO; DERWENT	2003/11/28 09:32
4	1	("4930505").PN.	EPO; JPO; DERWENT	2003/11/28 09:32



## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification <sup>6</sup> : <b>A61N 5/06</b>	<b>A1</b>	(11) International Publication Number: <b>WO 99/34868</b> (43) International Publication Date: 15 July 1999 (15.07.99)
(21) International Application Number: PCT/US98/27132 (22) International Filing Date: 18 December 1998 (18.12.98) (30) Priority Data: 09/003,665                7 January 1998 (07.01.98)                US (71)(72) Applicant and Inventor: SEGAL, Kim, Robin [US/US]; 18902 White Water Lane, Dallas, TX 75287 (US). (74) Agents: MCCOMBS, David, L. et al.; Haynes and Boone, L.L.P., 3100 NationsBank Plaza, 901 Main Street, Dallas, TX 75202-3789 (US).		(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).  Published With international search report.

(54) Title: DIODE LASER IRRADIATION AND ELECTROTHERAPY SYSTEM FOR BIOLOGICAL TISSUE STIMULATION



## (57) Abstract

The present invention is an irradiation, and electrotherapy system for treating biological tissue of a subject without exposing the tissue to damaging effects. The system includes a manipulable wand (14') for contact with the tissue, a diode laser (52) disposed in the wand for irradiating the tissue with coherent optical energy, a metal sheath (62) for providing electrical stimulation to the tissue, and setting controls for operating the wand to achieve a rate of absorption, a conversion to heat in the irradiated tissue in a range between a minimum rate sufficient to elevate the average temperature of the irradiated tissue to a level above the basal body temperature of the subject, and a maximum rate which is less than the rate at which the irradiated tissue is converted into a collagenous substance.

# United States Patent [19]

Hatje

[11] Patent Number: 4,930,505

[45] Date of Patent: Jun. 5, 1990

## [54] METHOD OF ENHANCING THE WELL-BEING OF A LIVING CREATURE

[75] Inventor: Guenther H. Hatje, Hamburg, Fed. Rep. of Germany

[73] Assignee: Helmut K. Pinsch GmbH & Co., Hamburg, Fed. Rep. of Germany

[21] Appl. No.: 105,608

[22] Filed: Oct. 5, 1987

### [30] Foreign Application Priority Data

Oct. 4, 1986 [EP] European Pat. Off. .... 86113792.5

[51] Int. Cl.<sup>5</sup> ..... A61N 5/00

[52] U.S. Cl. .... 128/398; 606/3

[58] Field of Search ..... 128/395, 396, 397, 398, 128/303.1

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2577425 8/1986 France .  
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1242188 7/1986 U.S.S.R. .... 128/395  
8606642 11/1986 World Int. Prop. O. .

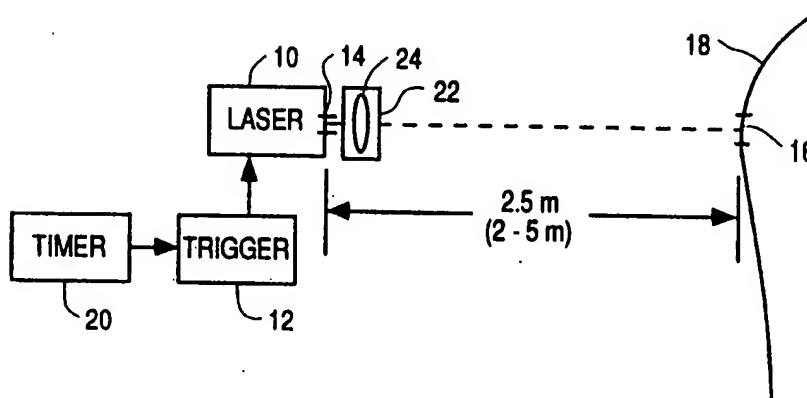
Primary Examiner—Edward M. Coven

Assistant Examiner—Mark J. Graham

### [57] ABSTRACT

A method of enhancing the well-being of a living creature, wherein energy from a laser light-source bombards a target area on the skin or hide of the living creature, a short-pulsed laser light source is disposed remote from the target area and produces an elevated emergence energy density so that its radiation, for a short duration, applies a high output per unit area to the target area.

8 Claims, 2 Drawing Sheets





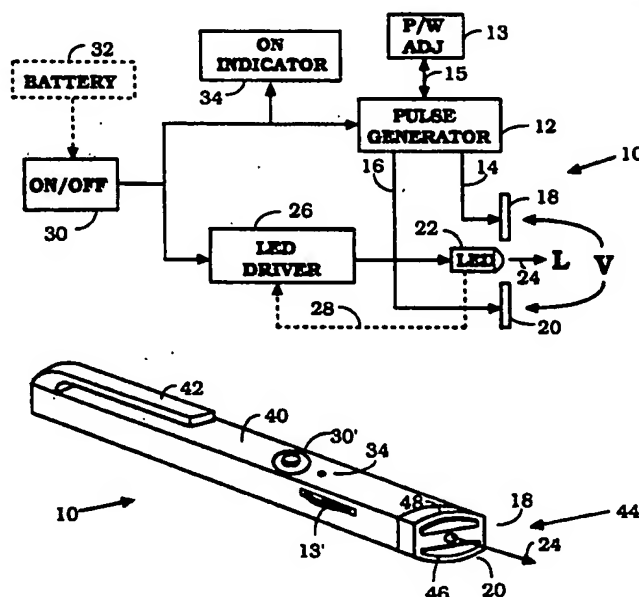
US005304207A

**United States Patent** [19][11] **Patent Number:** **5,304,207****Stromer**[45] **Date of Patent:** **Apr. 19, 1994****[54] ELECTROSTIMULATOR WITH LIGHT  
EMITTING DEVICE****[76] Inventor:** Merrill Stromer, 8924 N. 65th St.,  
Paradise Valley, Ariz. 85253**[21] Appl. No.:** 831,163**[22] Filed:** Feb. 5, 1992**[51] Int. Cl.<sup>5</sup>** ..... A61N 1/00; A61N 1/18;  
A61N 1/40**[52] U.S. Cl.** ..... 607/3; 607/46;  
607/88; 607/145**[58] Field of Search** ..... 128/419 R, 419 S, 419 C,  
128/783, 798, 800, 802, 395, 907, 421, 422, 362,  
396, 420 R, 420 A, 786, 803, 632-633; 606/32,  
42; 600/13, 14; 604/20; 273/84 ES; 361/232,  
225; 33/233; 231/7; 607/46, 88, 90**[56] References Cited****U.S. PATENT DOCUMENTS**

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pp. 339-344.**Primary Examiner**—Richard J. Apley**Assistant Examiner**—John P. Leubecker**[57] ABSTRACT**

An improved electrostimulator apparatus, comprises first and second electrodes spaced-apart a predetermined distance, an electrical signal generator for providing pulses of predetermined width and repetition rate to the spaced-apart electrodes, and an LED providing a beam of light projecting between the spaced-apart electrodes toward the object intended to be electrostimulated. The electrodes have substantially co-planar external faces approximately perpendicular to the light beam. The electrodes, signal generator and LED are mounted in an elongated housing having a longitudinal central axis. The electrodes are exposed on an end and the light beam is emitted from the same end and substantially parallel to the central axis. An ON/OFF switch actuates the signal generator and the LED when turned ON. It automatically turns OFF state when released so that the signal generator and the LED are always ON or OFF together.

**18 Claims, 1 Drawing Sheet**

12

**DEMANDE DE BREVET EUROPEEN**

Numéro de dépôt: 82810160.0

Int. Cl.<sup>3</sup>: **A 61 N 1/30, A 61 N 1/08**

Date de dépôt: 18.04.82

Date de publication de la demande: 26.10.83  
Bulletin 83/43

Demandeur: **Brodard, Roland, Avenue des**  
**Châtaigniers, 4, CH-1844 Villeneuve (CH)**

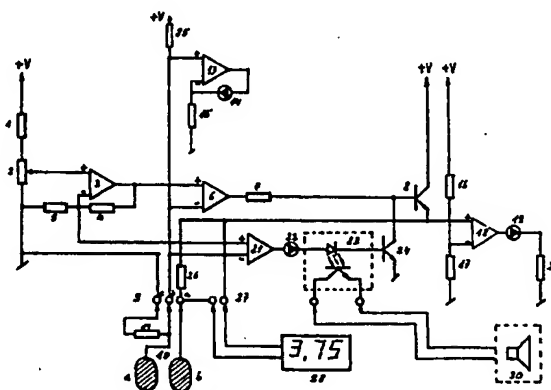
Inventeur: **Brodard, Roland, Avenue des Châtaigniers, 4,**  
**CH-1844 Villeneuve (CH)**

Etats contractants désignés: **AT BE CH DE FR GB IT LI**  
**LU NL SE**

Mandataire: **Steiner, Martin et al, c/o AMMANN**  
**INGENIEURS-CONSEILS EN PROPRIETE**  
**INTELLECTUELLE SA BERNE Schwarztorstrasse 31,**  
**CH-3001 Bern (CH)**

**Dispositif d'ionisation.**

Le dispositif comprend un générateur de courant (3, 6) réglable par un potentiomètre (2). Une résistance (11) est connectée en série avec une paire d'électrodes amovibles (10a, 10b) dans un circuit de contre-réaction du générateur par l'intermédiaire d'un transistor (8). La résistance (11) est solidaire des électrodes et détermine l'intensité du courant dans celles-ci. Sa valeur est déterminée par la surface des électrodes pour maintenir constante la densité de courant. Une diode LED (14) associée à un circuit (13) donne une indication de la densité de courant dans les électrodes. Une diode LED (19) associée à un comparateur (16, 17, 18) signale une saturation du transistor (8) limitant le courant lorsque la résistance entre les électrodes dépasse une valeur critique. Un comparateur (21) commandant une diode LED (22) de signalisation de sécurité et un second transistor (24) permettent d'interrompre le courant dans les électrodes si, en raison d'une forte résistance entre ces dernières, la tension sur la résistance (11) tombe en dessous de la tension d'entrée du générateur.



**EP 0 092 015 A1**

DERWENT-ACC-NO: 1983-802599

DERWENT-WEEK: 198344

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TITLE: Electrotherapeutic ioniser with adjustable current generator - has indicator and responds automatically to current density for safeguard against burns by sounding alarm

INVENTOR: BROADARD, R

PATENT-ASSIGNEE: BRODARD R[BRODI]

PRIORITY-DATA: 1982EP-0810160 (April 16, 1982)

PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
EP 92015 A	October 26, 1983	F	017	N/A

DESIGNATED-STATES: BE CH DE FR GB IT LI NL

CITED-DOCUMENTS: CH 385366; FR 2153191 ; FR 2180666 ; GB 2064178 ; US 4141359

INT-CL (IPC): A61N001/30

ABSTRACTED-PUB-NO: EP 92015A

BASIC-ABSTRACT:

The current generator comprises two operational amplifiers (3,6) with negative feedback loops, one purely resistive (4,5) and the other incorporating a saturable transistor (8) which supplies ionising current to body electrodes (10a,10b). A resistance (11) integral with the pair of electrodes determines the current density which is monitored by an operational amplifier (13) controlling a first LED (14).

Saturation of the transistor (8) is indicated by a voltage comparator (18) controlling a second LED (19) which gives warning of abnormal increase of resistance between the electrodes. When the voltage across the measuring resistance (11) falls far below a desired value with risk of burning the patient, a safety comparator (21) lights a third LED (22), operates a LED-phototransistor coupler (23) to sound an alarm (30), and closes a short-circuiting transistor switch (24). The circuit is esp. for use with an electrotherapeutic ioniser.

CHOSEN-DRAWING: Dwg.2/3

TITLE-TERMS: ELECTROTHERAPY IONISE ADJUST CURRENT GENERATOR INDICATE RESPOND  
AUTOMATIC CURRENT DENSITY SAFEGUARD BURN SOUND ALARM

DERWENT-CLASS: P34 S05

EPI-CODES: S05-A04;

SECONDARY-ACC-NO:

Non-CPI Secondary Accession Numbers: N1983-193361

[54] **ELECTRO-THERAPEUTIC FARADIC CURRENT GENERATOR**

[76] Inventor: Wallace A. Roberts, 88 N. Main St., Bellingham, Mass. 02019

[21] Appl. No.: 756,781

[22] Filed: Jan. 5, 1977

[51] Int. Cl.<sup>2</sup> ..... A61N 1/36

[52] U.S. Cl. .... 128/422

[58] Field of Search ..... 128/419 R, 420 A, 420 R, 128/421, 422, 423 R

[56] **References Cited**

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Primary Examiner—Wm. E. Kamm

Attorney, Agent, or Firm—William Nitkin

[57] **ABSTRACT**

Therapeutic faradic current generators are used for stimulation of muscles and nerves of a body. Disclosed is such a generator in one embodiment having a unijunction transistor relaxation oscillator that feeds a Schmitt trigger, the output of which gates a power oscillator. The power oscillator drives a pair of electrodes that are put in contact with the skin.

1 Claim, 1 Drawing Figure

